Public Works Academy of Seminole County
CONSTRUCTION TRADES COURSE MODULES (E)

➢ Portland Cement Concrete (4 hours) / PDV 0116

Course Description: This course will cover what quality concrete looks like; how water influences concrete strength; types and use of reinforcing steel and prestressing; procedures to use when pouring concrete; concrete finishing techniques and the importance of curing.

Performance Objectives:

- Identify field engineering, including locating property with the government survey system.
- Identify how the pressures of concrete affect forms and parts of forms.
- Identify how the pressure of concrete effects designs and construction of formwork.
- Explain water and damp proofing, control and provisions for ventilating and the control of air infiltration.

Outline:

I. Fundamentals of quality concrete
II. Reinforced and prestressed concrete
III. Pre-placement inspection
IV. Placement inspection
V. Post placement inspection

➢ Asphalt Paving (4 hours) / PDV 0117

Course Description: This course will explore the history of asphalt cement, how asphaltic concrete is created, types of pavement failures and procedures for both permanent and temporary repairs to pavement.

Performance Objectives:

- Identify the pavement components (surface, base and subgrade).
- Identify pavement repair resources (materials, equipment and personnel).
- Identify types of pavement failures and repair procedures (Disintegration, distortion, cracking and skid hazard).
- Identify maintenance outside existing pavement.
- Explain the special considerations in asphalt-pavement repair operations.
- Describe the safety and environmental effects of working with asphalt-pavement.

Outline:

I. Introduction
II. History of asphalt
III. Hot mix asphalt pavement
IV. Pavement failures and causes
V. Permanent repair procedures
VI. Temporary repair of small alligator cracking
VII. Large cracking area repairs using chip seal surfacing

➢ Carpentry (4 hours) /

Performance Objectives:

- Describe safety rules and precautions when working on construction job sites.
- Select, inspect, use and maintain common hand and power tools.
- Identify the basic components of blueprints, including title blocks, lines and symbols and revision symbols.
- Identify rigging safety, equipment, and inspection, includes crane hand signals, common rope knots and types of derricks and cranes.
- Identify the configuration, composition, and application of nails, fasteners, and adhesives.
- Identify types of foundations and soils
- Understand the various uses of wood, masonry, metals, concrete, and glass
- Understand the various uses of heavy timber and light frame construction
- Understand the assembly of partitions
- Identify uses of steel frame construction

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CONSTRUCTION TRADES COURSE MODULES (E)

➢ Construction Electrical Systems (4 hours) /

Performance Objectives:

- Define job requirement from contract documents/blueprints.
- Calculate loads, currents, derating factors, correct size feeders.
- Identify with emergency power systems and overcurrent protection.
- Determine size of panelboard and service supply, compute and connect branch and lighting circuits in accordance with NEC (National Electrical Code).

➢ Excavation (4 hours) / PDV 0118

Course Description: A four-hour course designed to develop a basic understanding of general concepts involved in excavation. Emphasis is on the methodologies and equipment employed in a wide range of excavating activities ranging from small projects associated with line repairs, to larger scale operations such as road construction or site development.

Performance Objectives:

- Understand the types of excavation (i.e., ditch, trench, mass, etc.)
- Understand the types of materials to be excavated and the equipment used.
- Understand the angle of repose for different soils.
- Understand dewatering.
- Identify techniques for disposal of excess or unsuitable materials.
- Understand undercut and the reasons why.

Outline:

I. Introduction to safety concepts associated with excavation focusing on:
   A. sloping
   B. shoring
   C. trench boxes
II. Introduction to standard excavating equipment including the intended uses and limitations.
III. Introduction to drainage including:
   A. well pointing
   B. cutting ditches
   C. digging retention ponds
IV. Soil types and materials including densities and the standard test methods used to evaluate density.
V. Stabilization materials and techniques including:
   A. limerock
   B. soil cement
   C. shell